

MATERIAL SAFETY DATA SHEET

ISSUED by ZEOLITE PRODUCTS



Issue Date: 01 January 2007
Product Name: **ZEOLITE; CLINOPTILOLITE**

1. COMPANY DETAILS

Company Name: Zeolite Products
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2. PRODUCT IDENTIFICATION

Product Name: Natural Zeolite; Clinoptilolite
CAS NO. Natural Zeolite: 1318-02-1
CAS NO. Clinoptilolite: 12173-10-3
Intrastat Code: 2530 90 98
EG NO. Clinoptilolite: 215-283-8
Chemical Name: Hydrated Calcium Aluminosilicate, of sedimentary origin.
Synonyms: Clinoptilolite
Formula: $(Ca,K_2,Na_2,Mg)_4 Al_8Si_{40}O_{96} \cdot 24H_2O$

a INFORMATION ON THE POSSIBLE RISK

K_T or K_H or K_R Not Applicable
R sentences (No.) None
S sentences (No.) None
Chemical risk Not Applicable

b PHYSICAL & CHEMICAL CHARACTERISTICS

State at 20 °C Solid
Appearance: Light grey-green coloured granular and powder
Odour, smell: None, earth like
Boiling Point: Not Applicable
Freezing Point: Not Applicable
Melting Point: >1.000 °C
Density (kg/m³): 2200-2440
Vapour Pressure: Not Applicable (*mm Mg*)
Vapour Density (air=1): Not Applicable
Solubility in Water: 0, Insoluble
Solubility in Greases: Not Applicable
Partition coeff. n-octanol/water: Not Applicable
Density of vapours: Not Applicable
Tension of vapours at 20 °C: Not Applicable
Oxidizing properties: Not Applicable
Relative density of vapours: Not Applicable
Flash-point: Up to 600 °C neg.
Point of flammability: settled dust-up to 600 °C neg. swirled dust-up to 800 °C neg.
Explosion limits (vol. % in air): Explosion-proof

Evaporation Rate: Not Applicable

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c STABILITY AND REACTIVITY

Stability: Stable under normal conditions of use.
Acid stability: 79,5%
Thermal stability: Up to 400 °C
Conditions to Avoid: Not Applicable
Materials to Avoid: Strong Oxidizing Agents, such as fluorine, chlorine trifluoride, and oxygen difluoride.
Hazardous decomposition: None
Hazardous decomp. products: None
Hazardous Polymerization: Will not occur

d TOXICOLOGICAL INFORMATION

NPK (average): Not Applicable
NPK (limit): Not Applicable

LD₅₀: It was not possible to establish the value of acute oral LD₅₀. No animal died after a dose of 20000 mg/kg. Higher doses may not be applied.
It was not possible to establish the value of acute dermal LD₅₀. After the application of a dose of 5000 mg/kg onto the bare skin on the back of experimental animals, no animal dies. Higher doses may not be applied.

Eye irritation: A very mild and short irritation of conjunctival membrane. (Besides a mild repletion after 2 hours after the preparation application disappearing after 24 hours, no inflammatory changes of conjunctival membrane were observed).

Skin irritation: Zeolite does cause any inflammatory changes on the intact or disturbed, no other symptoms of toxicity even after a multiple application.

Affecting live organisms: Zeolite may be classified as a little toxic, even harmless substance. It does not present any risk after repeated skin applications and is not absorbed by skin in hazardous quantities. Irritation of conjunctival membrane is very mild and short lasting.

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**3 INSTRUCTION FOR THE FIRST AID**

In case of health problems or doubts, the physician is to be informed and provided with the information according to this MSDS.

Type of risk	Acute risk	Prevention	First aid
Inhalation	Not given	Ensure by means of technical provisions that NPK of the dust in closed areas (storages) does not exceed 5 mg/m ³ . Where it is impossible to ensure such conditions, a respirator is to be used for the protection of respiratory passages.	Fresh air, medical aid
Skin	Presents no risk after repeated skin applications and is not absorbed by skin in dangerous quantities.	Use protective gloves and clothing.	Wash with water and soap.
Eyes	Irritates conjunctival membrane very mildly and for a short time	Use protective goggles.	Rinse eyes with a lot of water for several minutes, medical aid.
Ingestion	Not given	No eating, drinking. Wash hands after work.	Drink 0.5 l potable water or warm water with the active coal suspension. Medical aid.

4 INSTRUCTIONS IN THE CASE OF FIRE

Type of risk	Acute risk	Prevention	First aid/ Fire reporting
Fire	Not inflammable material	Not given	Not given
Explosion	Inexplosive	Not given	Not given

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**5 INSTRUCTIONS FOR THE CASE OF AN ACCIDENTAL ESCAPE**

Procedure in case of an accident or emergency: Zeolite does not contaminate either soil or water. It is not a dangerous waste. It may be combined with soil or drained.

Waste disposal: Mechanically, may be combined with soil as zeolite is a certified soil excipient. Zeolite does not contaminate water – it may be drained into the sewage. Zeolite is not a dangerous waste!
Used packs of zeolite are to be salvaged or burnt in an approved incinerator after being thoroughly emptied.

6 SAFETY INSTRUCTIONS FOR HANDLING AND STORAGE

Instructions for handling:

- in view of health protection and labour safety, employees working in the manufacture process of and those applying the zeolite must use protective working means.
- environment in the process of manufacture and application must be ensured so that NPK-P in the atmosphere is not exceeded.
- employees must be instructed on the product and follow principles of health protection and labour safety.

Instructions for storing: Product must be stored in original intact and sealed packages in dry, clean, well aired and closed storage, separately from consumables and drugs.

7 EXPOSITION LIMITATIONS AND PERSONAL PROTECTIVE

Zeolite in form of dust, aerodispersion system, is to be held for a substance with the prevailing nitrogenous effect respirability limit $5 \mu\text{m}$. Due to SiO_2 content, NPK-P for the work environment is $5 \text{ mg}\cdot\text{m}^{-3}$. Work stations must be dust controlled or aired so that the max. dust concentration is $5 \text{ mg}\cdot\text{m}^{-3}$ air. Where it is not possible to achieve these conditions temporarily, personal protective working means (protective clothing and shoes, respirator with dust insert, rubber gloves, protective goggles) must be used to protect respiratory passages, skin and eyes. When the work is finished, hands must be washed with water and soap.

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**8 ECOLOGICAL INFORMATION**

Results obtained by testing zeolite failed to enable establishing LC 50 for the fish and daphnia as the tested animals had been administered maximum concentrations exceeding the limits for the preparation to be classified as a substance „almost not toxic for the fish and other animals“. Based on 96 hours of static acute testing the toxicity with the fish (Cyprinus carpio L., Poecilia reticulata Peters) and a 24 hour acute immobilization test with daphnia (Daphnia magna Straus), the natural zeolite was classified as a substance for the fish and daphnia almost not toxic.

Pursuant to the opinion of the National Referential Laboratory for pesticides of the IVM (Institute of Veterinary Medicine) Clinoptilolite „ is relatively harmless for domestic animals, cattle and wild animals“, „for the fish and other water animals almost non-toxic“.

9 WASTE DISPOSAL

Waste disposal - mechanically. Residues of zeolite (without other additives) may be combined with soil as zeolite is registered as a soil excipient. Zeolite does not contaminate water – it may be drained to the sewage. Zeolite is not a hazardous waste!

10 INFORMATION ON TRANSPORTATION

Land transport (GGVS, GGVE, ADR, RID) Class: Digit/letter/: UN No.: Warning label: Kemler No.: Note:	Not given
Sea transport (IMDG, GGVSee): Class: EMS No.: UN No.: MFAG: Type of packing: Technical name:	Not given
Air transport (ICAO/IATA) Class: UN No.: Type of packing:	Not given

11 LEGAL REGULATIONS

EC classification: Not classified as dangerous
Warning sign: Handle in accordance with good operational hygiene and labour safety and health protection regulations.
R- & S-sentence No. And wording: None
Other: Information provided in this document is based on our best knowledge to the date of issuance of this card. It is a guide for safe use and storage of the preparation of zeolite.